Short review of GIS implementation

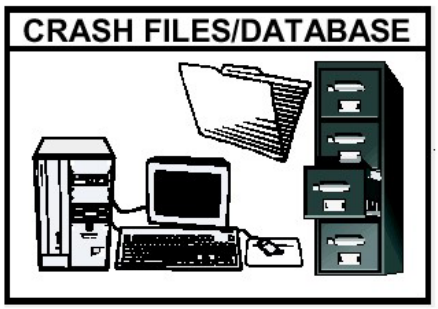
GIS in Traffic Engineering, City of Madison

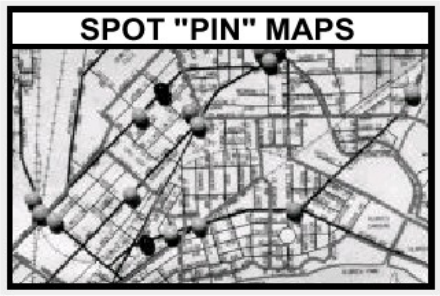
Final results of 2000 and 2001 WisDOT BOTS funded grant

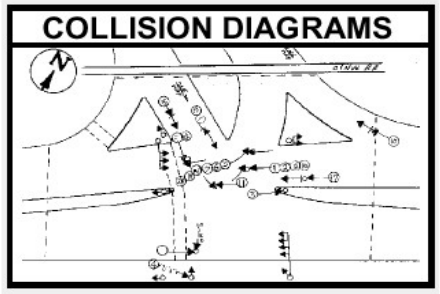
The Plan for Traffic Engineering

Convert **all data** to all electronic format saving time and paper from the current system

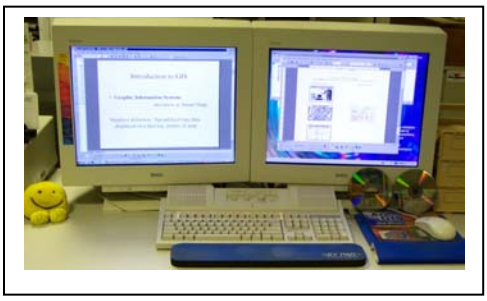
Previous Data Process and Sharing

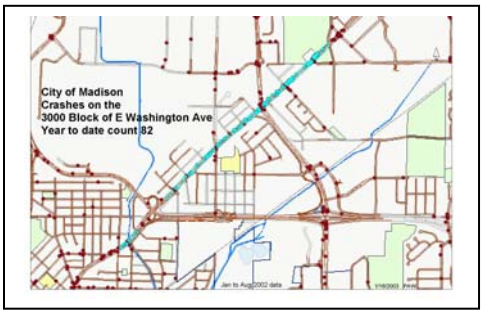






Current Data Process and Sharing





Getting GIS started

- Traffic Engineering has selected personal to staff the GIS project, attempting for each position being two deep, that both engineers and technicians
- TE has made software selections
  –Microsoft Access for database management
  –ESRI Arcview for spatial representation and also the most popular GIS software for inner-agency and outside agency information sharing

Current results

- Traffic Engineering trained selected personal and to staff the GIS project, but have been unable to be two deep, due to retirements and other staff changes.
- The software selection and has worked great, currently working on the inner-agency and outside agency information sharing.

Current Steps for TE GIS

- Interacting with other departments
  - Original - Proposed Status Report or Newsletter
  - We did three Status Reports and found this process ineffective; we would discuss the status in internal and external staff meetings and found it a duplication of effort.
  - Along with internal staff meetings, we have done demonstrations for city staff, local GIS groups (GITA and WIPublicSafetyGIS).

Other Steps for TE GIS

–**Interacting with other departments**

•City Planning (In-house Arcview Expertise) - This interaction is excellent, our process work in great harmony, also started by planning and the former MPO, a city ESRI GIS user group. This group meets twice monthly for tips, training and data sharing.
•Lieutenant Joe Balles, Madison Police - This interaction has been beneficial in scanning the MV 4000, we can now hot link our crash data GIS directly to the crash. We would like to see more interaction in the coming year.
•Martha Florey WisDOT, BOTS - This interaction has been instrumental in getting GIS going in traffic engineering, implementing GIS we see a need for standards and also data sharing policies.

•Other agencies
–City **I**nformation **S**ervices - IS did the hardware purchases and installation, they use a progress database system, software support is internal to TE and engineering supports the map sever.

–Dane county - This is the newest interaction, we are just talking now, but both have similar processes, we hope to be working to set data standards and process standards.
–WisDOT District One - District One requests the roadway corridor crash data from our office, this is ironic due to the fact it is DOT data.

Short Term Goals (Less than 1 year)

- The main focus will be crash data information that will be used by both the TE
- and Police Departments.
- Replace paper forms
- A working GIS system for 2001 Bike and Pedestrian Crashes

These goals have been met, except the "Replace paper forms" currently going paperless is not realistic, but with the new printer we have merged the form and will use half the paper for 2002 and can be reduced again 2003 depending on the needs of the traffic engineers. Going paperless will require an intranet or Internet GIS application.

Long Term Goals

- Information available to other agencies
- Enhanced special reports for City/County or State leaders done by Alder district, School zone, or Emergency Routes.
- Enhanced reports for City/County or State, with cost savings and reducing processing.

We have shared our experience with other city agencies and out side agencies, after the GITA demonstration, the VB code for post processing of crashes has been requested by the Village of Menomonee Falls and Lincoln County. We have been doing all sorts of special reports, for crashes and citations. Our processing time has been reduced over 50% of the original processing time and can be reduced more. Again the three long term goals will be improved with an intranet or Internet graphic information system application.

Other Considerations

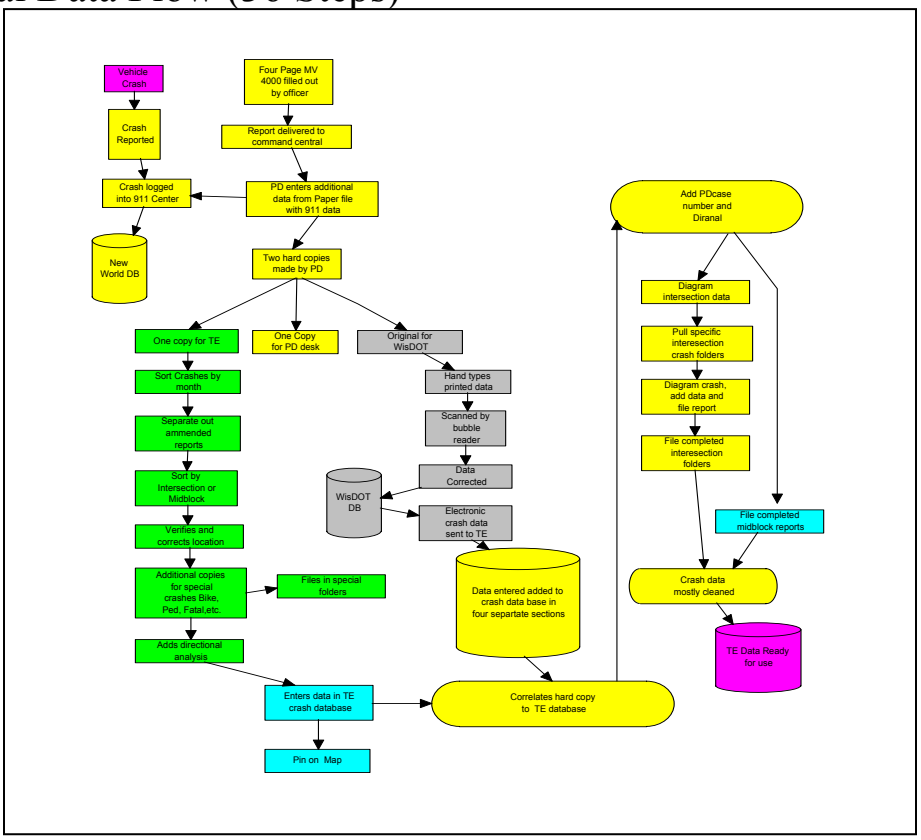
- Implementing a GIS system to function and expand with other safety or grant programs.
- Defining all Information System needs such as larger shared hard drives to support map type networks
- Setting Data Policy issues
- Security Issues - City IS security
    - Personal information of Crash participants
        - User friendly - For Traffic Engineering and the Police Department
    - Expandable - Incorporate other city data,
        - - Usable by agencies outside the city

We have a traffic crash GIS working in Traffic Engineering and will be expanding to other mapping needs in our office, each system will need to be analyzed as the crash data has been to make corrections to the processes and data. Each data system added adds references to enhance crash data. Defining all IS needs is difficult due to changes in information technology and

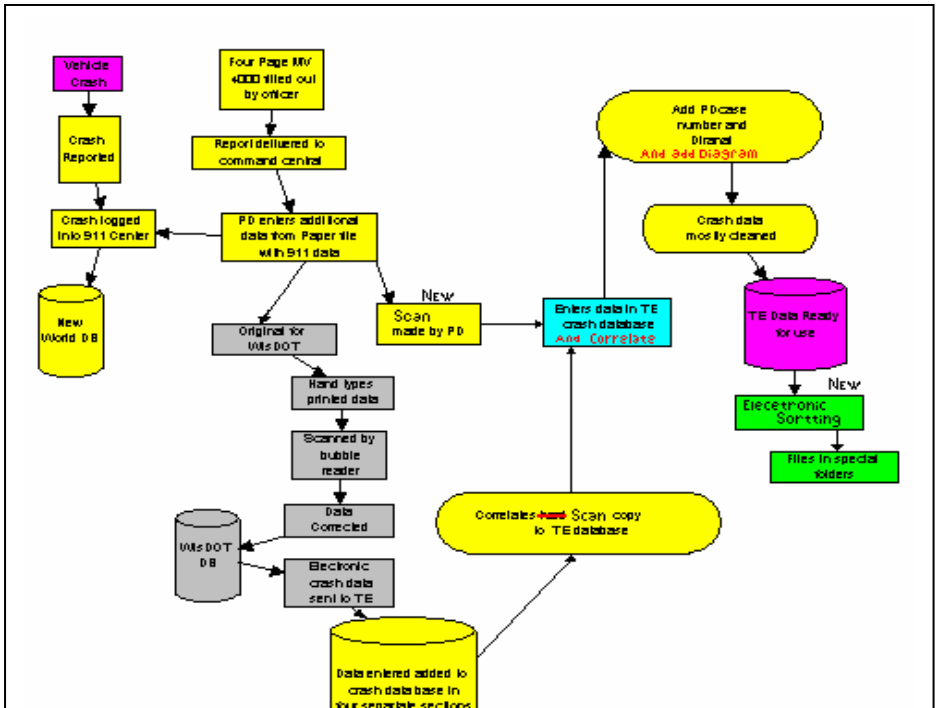
hardware available. City planning has ArcIMS loaded twice on the city system and both times it crashed. We hope part of our implementation and or process can be used in Badger TRaCs.

The above is all based on goals as presented in the Feb 2001 GIS power point presentation. It is also the conclusion of first year and part of the second year of WisDOT BOTS funding.

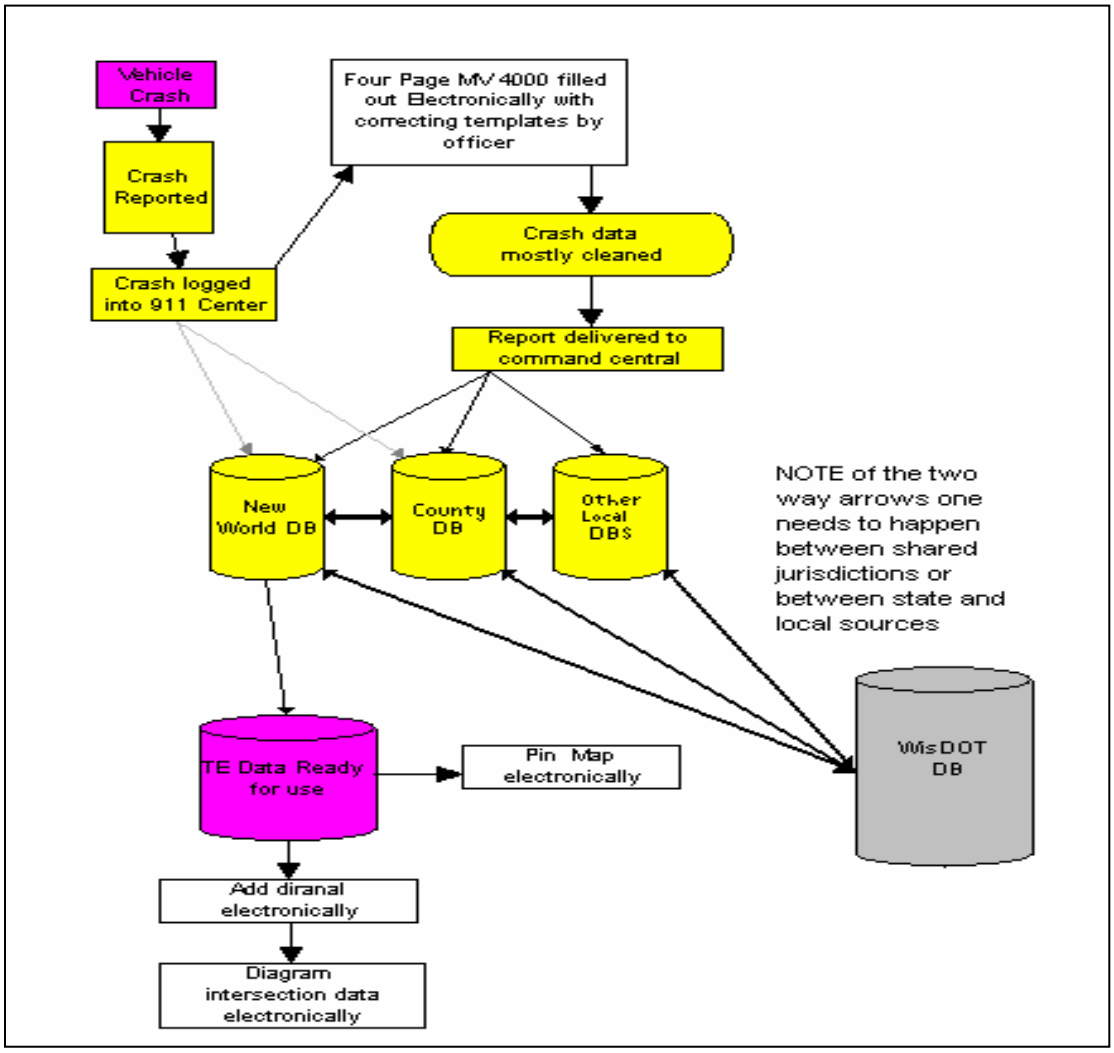
Original Data Flow (36 Steps)



Current Data Flow (22 Steps)



Possible New Data Flow



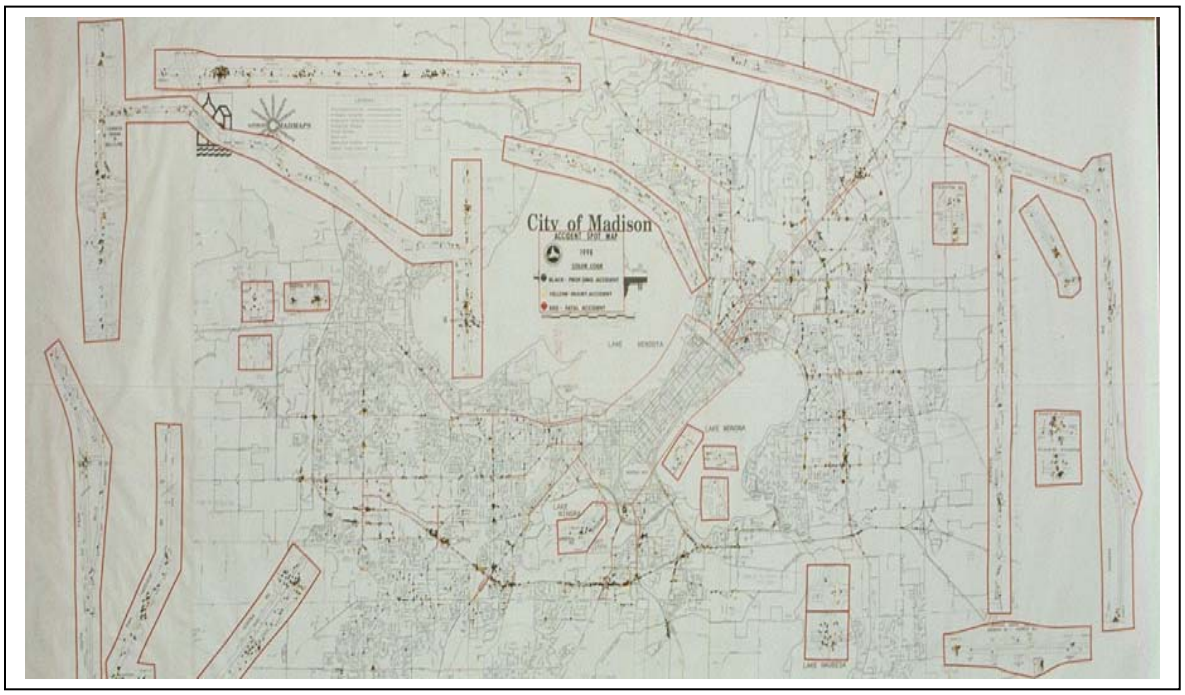
Current Status

•Automate “pin” mapping of crashes-completed
•Automate diagramming of intersection crashes - completed
•Speed transfer of crash data to users-turnaround is improved, but our goal is a web base system
•Enhance crash data query capabilities-completed
•Increase staff efficiency-already substantial improvement, a lot more is possible

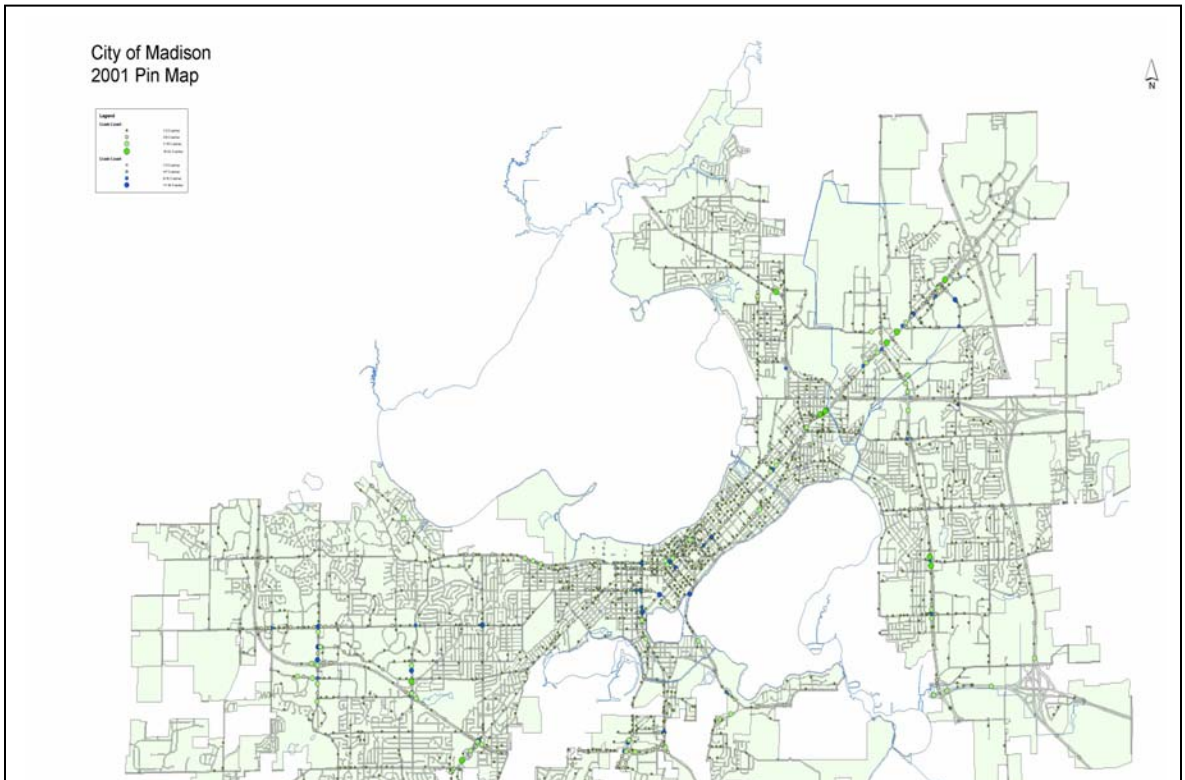
•Work more directly with other local agencies (Madison Police, Dane Co. Sheriff) - continuing

The first two years of grants have given us knowledge of setting up a Crash Data Base in a Database setting and also a GIS setting. In this process, it becomes apparent the need for reporting standards, data standards, data sharing and process sharing. The following will show some of the great strides we have made and want to share.

Pin Mapping (Old manually on large board)



Pin Mapping (New pinned by computer)



Final result of 2001 WisDOT BOTS funded grant, second year

Along with training that allowed the completion of the VBA (Visual Basic for Applications) a seat belt survey was done to collect seat belt usage using a pocket PC. The program written can be used on any pocket PC with MS windows CE. Data is collected and distributed with a minimum of data errors and better efficiency than a paper based system.

Conclusion

GIS has helped us to be more efficient in data capturing, with a few clicks of the mouse we can capture location, analysis and direction and the data in to our crash database and have it work with our existing paper system. We have done all programming in house saving money on outside vendors and building internal knowledge. We have and hope to continue to share our process locally, within Wisconsin, and nationally. This would not have been possible without a grant administered by the Wisconsin Department of Transportation, Bureau of Transportation Safety, special thanks to Martha Florey. We will continue to move forward with GIS, hopefully this year with external city partners, setting standards to be used for Badger TRaCs.

February 18, 2004 PAW